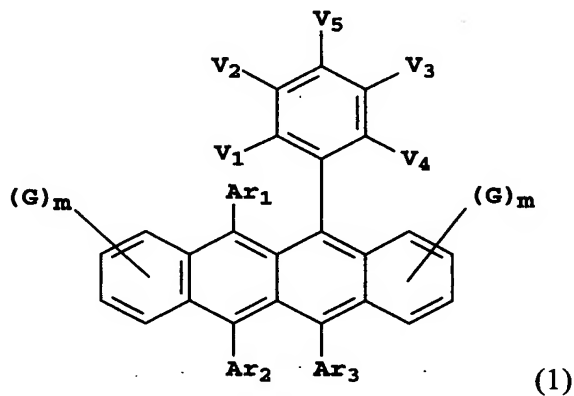


## CLAIMS:

1. An electroluminescent device comprising a host material and a rubrene derivative having a naphthacene nucleus comprising four fused phenyl rings a, b, c, and d, in order, containing two secondary phenyl ring groups  
5 linked to the "c" ring, each bearing directly or indirectly a fluoro or perfluoroalkyl group, wherein each fluoro or perfluoroalkyl group is either:
  - a) linked directly to one of said secondary phenyl rings and is located on a meta or ortho position, or b) located in any position of another aryl group linked directly or indirectly to one of the secondary phenyl rings.
- 10 2. The device of claim 1 wherein the perfluoroalkyl group is a trifluoromethyl group.
3. The device of claim 1 wherein the secondary phenyl ring on the "c" ring bears a fluoro or perfluoromethyl group on a meta- or ortho-position of that ring.
- 15 4. The device of claim 1 wherein the each secondary phenyl ring on the "c" ring bears a fluoro or trifluoromethyl group on a meta- or ortho-position.
5. The device of claim 1 wherein at least one secondary phenyl ring on the "c" ring bears a meta- or ortho-fluoro substituent.
- 20 6. The device of claim 1 at least one secondary phenyl ring on the "c" ring is linked to an aryl group that is substituted with a fluoro or perfluoroalkyl group.

7. The device of claim 6 wherein the aryl group is a phenyl group that bears a meta- or para-fluoro substituent.

8. The device of claim 1, wherein the rubrene derivative is represented by Formula (1),



wherein:

Ar<sub>1</sub>, Ar<sub>2</sub>, and Ar<sub>3</sub> represent independently selected aryl groups;

each G represents an independently selected substituent;

each m is independently 0-4;

V<sup>1</sup> – V<sup>5</sup> represent hydrogen or independently selected

substituent groups, provided there are in total two fluoro or perfluoroalkyl groups linked directly or indirectly to the “c” ring, selected from those where:

a) at least one of V<sup>1</sup> – V<sup>4</sup> represents a fluoro or perfluoroalkyl group,

or

at least one of V<sup>1</sup> – V<sup>5</sup> and Ar<sub>3</sub> includes an aryl ring bearing a fluoro or trifluoromethyl group.

9. The device of claim 8, wherein V<sup>3</sup> represents a fluoro substituent.

10. The device of claim 9, wherein at least one of V<sup>2</sup>, V<sup>3</sup> or V<sup>5</sup> includes a phenyl ring bearing a fluoro or perfluoroalkyl group.

11. The device of claim 9 wherein the substituents are selected to provide an emitted light having an orange-red hue.

5 12. The device of claim 9 wherein the substituents are selected to provide an emitted light having a wavelength of maximum emission ( $\lambda_{\max}$ ) in ethyl acetate solution such that

$$520\text{nm} \leq \lambda_{\max} \leq 650\text{nm}.$$

10 13. The device of claim 9 wherein the substituents are selected to provide a reduced loss of initial luminance compared to the device containing no rubrene derivative.

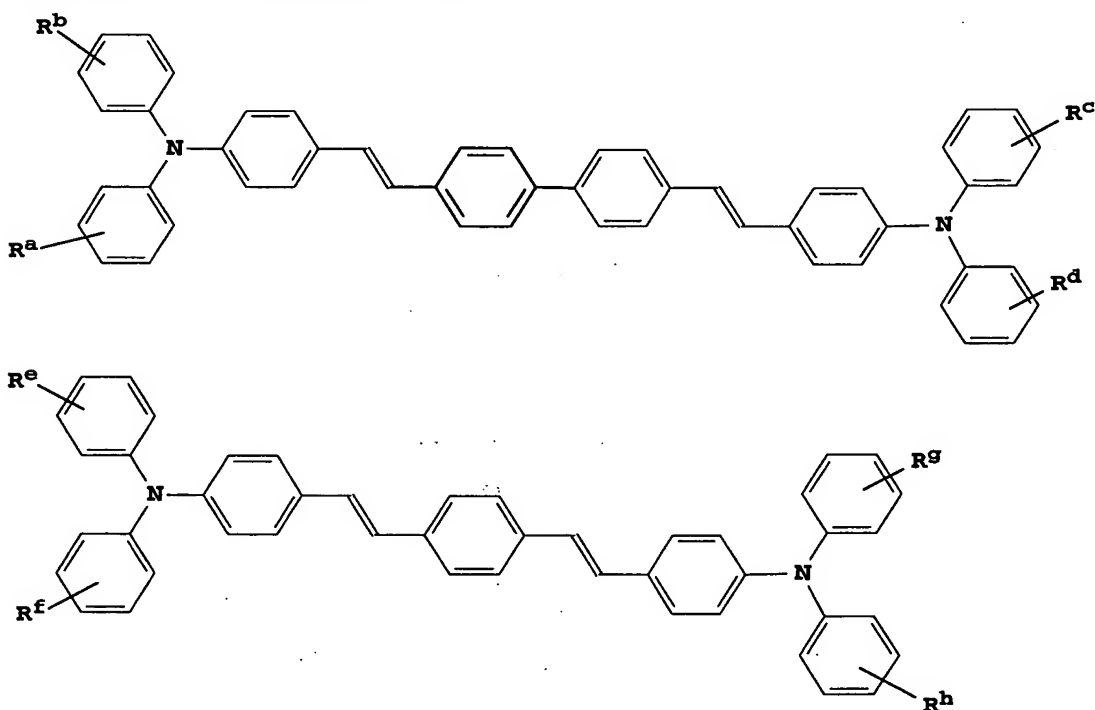
14. The device of claim 1 wherein:  
either  
a) the sublimation temperature of said derivative is lower by at  
15 least 5°C than the derivative without the fluoro or  
perfluoroalkyl groups;  
or  
b) the derivative sublimates and the derivative without the fluoro  
or perfluoroalkyl groups melts.

20 15. A device of claim 1 wherein the derivative has a sublimation temperature of at least 10°C lower than that of the rubrene without fluorine or fluorine containing groups.

16. The device of claim 1, further comprising a blue or blue-green light-emitting compound to provide a white light emission.

17. The device of claim 16 wherein the blue or blue-green light-emitting material comprises a perylene group.

5 18. The device of claim 16 wherein the blue or blue-green light-emitting material comprises a material of one of the following structures:



wherein:

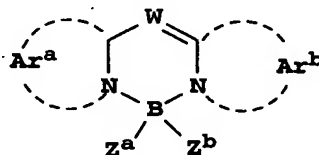
10  $R^a - R^h$  independently represent hydrogen or one or more an independently selected substituents.

15 19. The device of claim 18 wherein the blue or blue-green light-emitting material comprises 1,4-bis[2-[4-[N,N-di(p-tolyl)amino]phenyl]vinyl]benzene (BDTAPVB) or 1,4-bis[2-[4-[N,N-di(p-tolyl)amino]phenyl]vinyl]biphenyl.

20. The device of claim 16, wherein, the blue or blue-green light-emitting compound comprises a boron complex.

21. The device of claim 20 wherein the blue or blue-green light-emitting material comprises a compound represented the following structure:

5



wherein:

Ar<sup>a</sup> and Ar<sup>b</sup> independently represent the atoms necessary to form an aromatic ring group;

10

w represents N or C-Y, wherein Y represents hydrogen or a substituent; and

Z<sup>a</sup> and Z<sup>b</sup> represent independently selected substituents.

22. The device of claim 21 wherein w represents N.

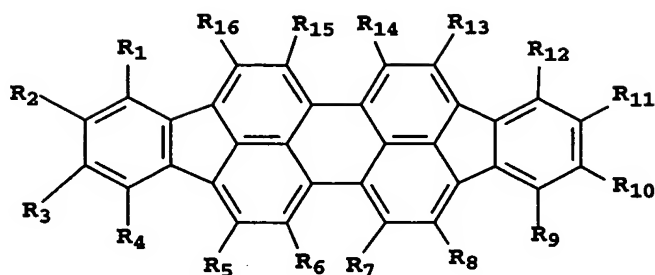
23. The device of claim 1, further comprising a red light-emitting compound to provide a white light emission.

15

24. The device of claim 23, wherein the derivative does not emit light.

25. The device of claim 24 wherein the red light-emitting compound comprises a diindenoperylene compound of the following structure:

20



wherein:

R<sub>1</sub>-R<sub>16</sub> are independently selected as hydrogen or a substituent.

26. The device of claim 25, wherein R<sub>1</sub>, R<sub>4</sub>, R<sub>9</sub>, R<sub>12</sub> represent  
 5 independently selected phenyl groups, R<sub>2</sub>, and R<sub>3</sub> as well as R<sub>10</sub> and R<sub>11</sub> form  
 independently selected fused benzene ring groups.

27. The device of claim 1, wherein the host material is a hole-  
 transporting material.

28. The device of claim 1, wherein the host material is a hole-  
 10 transporting material comprising a tertiary amine.

29. The device of claim 1, wherein the host material is an  
 electron-transporting material.

30. The device of claim 29, wherein the electron-transporting  
 material comprises a metal complex of 8-hydroxyquinoline.

15 31. The device of claim 1 wherein the derivative is present in  
 an amount of up to 10%-wt of the host material.

32. The device of claim 1 wherein the derivative is present in  
 an amount of up to 0.1-5.0%-wt of the host material.

33. A display comprising the electroluminescent device of claim 1.

34. The device of claim 1 wherein white light is produced either directly or by using filters.

5 35. An area lighting device comprising the electroluminescent device of claim 1.

36. A process for emitting light comprising applying a potential across the device of claim 1.